

LISTING OF THE CLAIMS

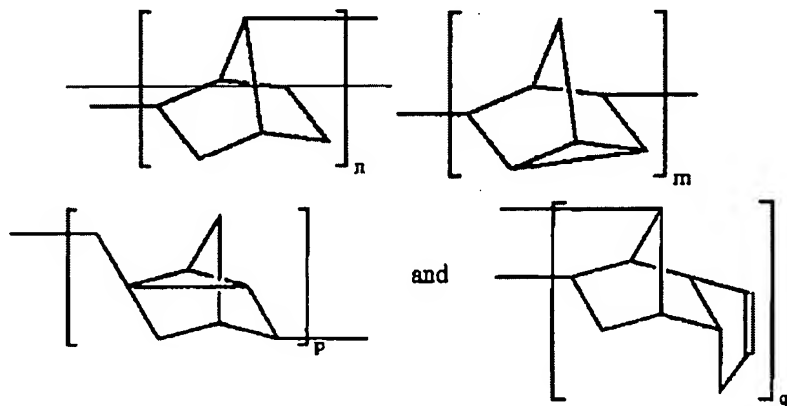
1. (previously presented) A multi-arm star block copolymer composition of matter comprising:

an aromatic core having one or more arms extending therefrom;

wherein each of the one or more arms are formed from a polyisobutylene segment and a cycloolefin or polycycloolefin segment,

wherein the polyisobutylene segment and the cycloolefin or polycycloolefin segment form a repeating unit multiblock copolymer,

wherein the cycloolefin or polycycloolefin segment is selected from one or more of the following formulas that is derived from a corresponding norbornadiene compound:



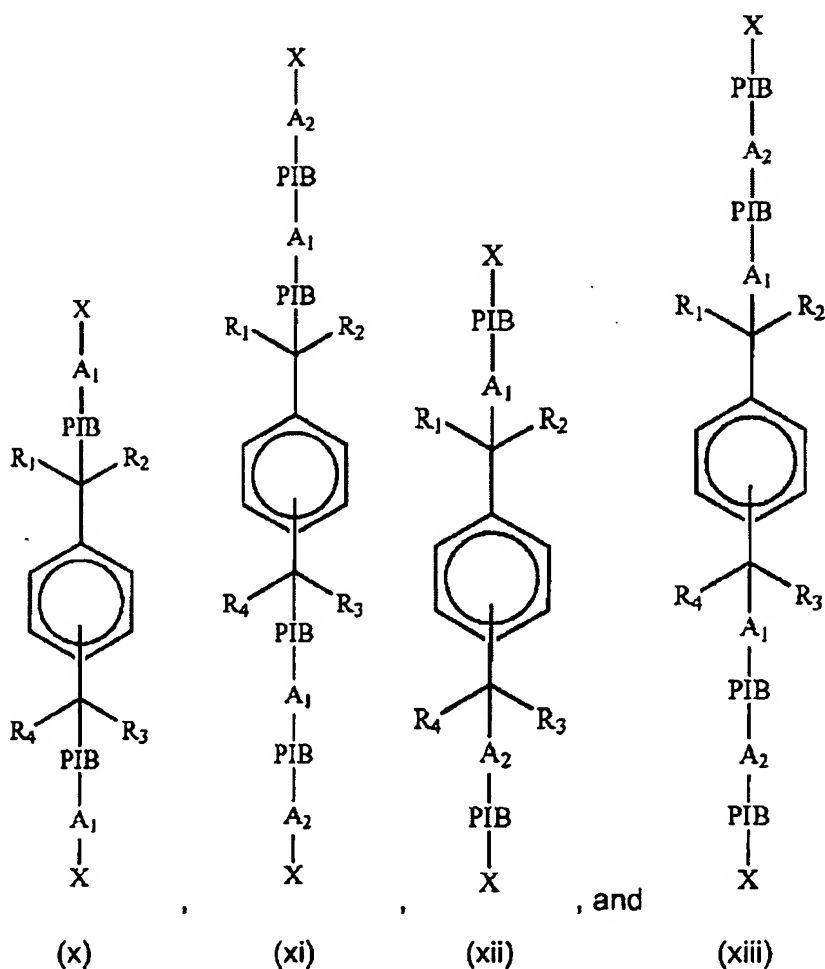
wherein n, m, p and q are all independently-selected integers that are at least 1.

2. (previously presented) The composition of matter according to claim 1, further comprising an aromatic core from which two arms extend, wherein each arm comprises the PIB segment and the cycloolefin or polycycloolefin segment.

3. (original) The composition of matter according to claim 2, wherein each of the arms comprises the same copolymer.

4. (original) The composition of matter according to claim 2, wherein each of the arms is obtained by a living cationic polymerization process.

5. (previously presented) The composition of matter according to claim 2, wherein the composition of matter is represented by the formula selected from the one or more of the following formulas:



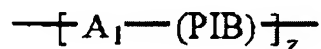
wherein A_1 and A_2 are independently-selected cycloolefin or polycycloolefin segments;

wherein R_1 to R_4 are each independently selected from hydrogen, a methyl group, an ethyl group, and a phenyl group; and

wherein X is selected from $-\text{Cl}$, $-\text{Br}$, $-\text{OH}$, $-\text{OCH}_3$, $-\text{OCH}_2\text{CH}_3$, and $-\text{OCOCH}_3$.

6. (previously presented) The composition of matter according to claim 1, further comprising an aromatic core from which three arms extend, wherein each arm comprises the PIB segment and the cycloolefin or polycycloolefin segment.

7. (previously presented) The composition of matter according to claim 1, wherein the polyisobutylene segment and the cycloolefin or polycycloolefin segment are arranged according to the formula:



wherein Z is an integer that is at least 1, and wherein A_1 is the cycloolefin or polycycloolefin segment.

8. (previously presented) The composition of matter according to claim 1, wherein the polyisobutylene segment and the polycycloolefin segment are arranged according to the formula:



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wherein X is an integer that is at least 1, and wherein A₁ and A₂ are independently selected cycloolefin or polycycloolefin segments.

9. (original) A thermoplastic elastomer comprising the composition of matter according to claim 1.

10. (original) An adhesive composition comprising the composition of matter according to claim 1.

11. (original) A coating composition comprising the composition of matter according to claim 1.

12. (previously presented) A method of preparing a composition of matter, the process comprising the steps of:

providing a bifunctional aromatic core;

reacting the bifunctional aromatic core with isobutylene to form a macroinitiator having two arms, said macroinitiator comprising polyisobutylene functionalized at the terminus of each arm;

adding a functional group to the terminus of each arm of the macroinitiator to introduce an active site capable of initiating cationic polymerization of block polymer segments at the terminus of each arm; and

initiating cationic polymerization to form the block polymer segments of each arm, thereby forming a multi-arm star composition of matter having multiblock copolymer arms,

wherein the cationic polymerization step involves the cationic polymerization of a norbornadiene compound.

13. (previously presented) The method according to claim 12, wherein the step of initiating cationic polymerization comprises the step of:

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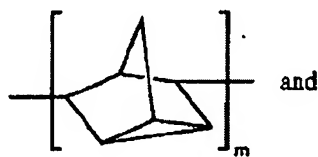
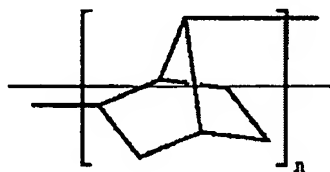
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cationically polymerizing the multiblock arms, wherein the arms comprise the general formula:

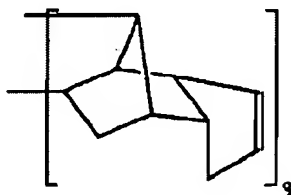


wherein PIB is a polyisobutylene segment;

wherein A₁ and A₂ are cycloolefin or polycycloolefin segment independently selected from one or more of the following formulas:



and



wherein *n*, *m*, *p* and *q* are all independently-selected integers that are at least 1.

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14. (original) The method according to claim 12, wherein the bifunctional aromatic core is a dicumyl core.

15. (original) The method according to claim 12 further comprising the step of providing a functional group at a terminus of each arm to terminate polymerization of the arms.

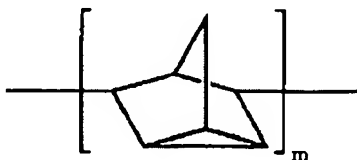
16. (previously presented) The method according to claim 15, wherein the functional group is selected from $-\text{Cl}$, $-\text{Br}$, $-\text{OH}$, $-\text{OCH}_3$, $-\text{OCH}_2\text{CH}_3$, and $-\text{OCOCH}_3$.

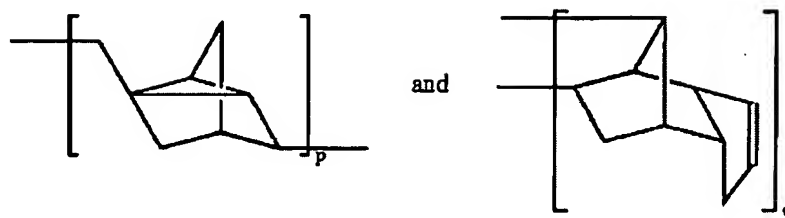
17. (previously presented) A thermoplastic elastomer produced by the process of claim 12.

18. (previously presented) An adhesive produced by the method of claim 12.

19. (previously presented) A coating produced by the process of claim 12.

20. (previously presented) A composition of matter comprising:
a polyisobutylene segment and a cycloolefin or polycycloolefin segment,
wherein the polyisobutylene segment and the cycloolefin or polycycloolefin segment
form a repeating unit multiblock copolymer,
wherein the cycloolefin or polycycloolefin segment is derived from a norbornadiene
compound as is selected from one or more of the following formulas:





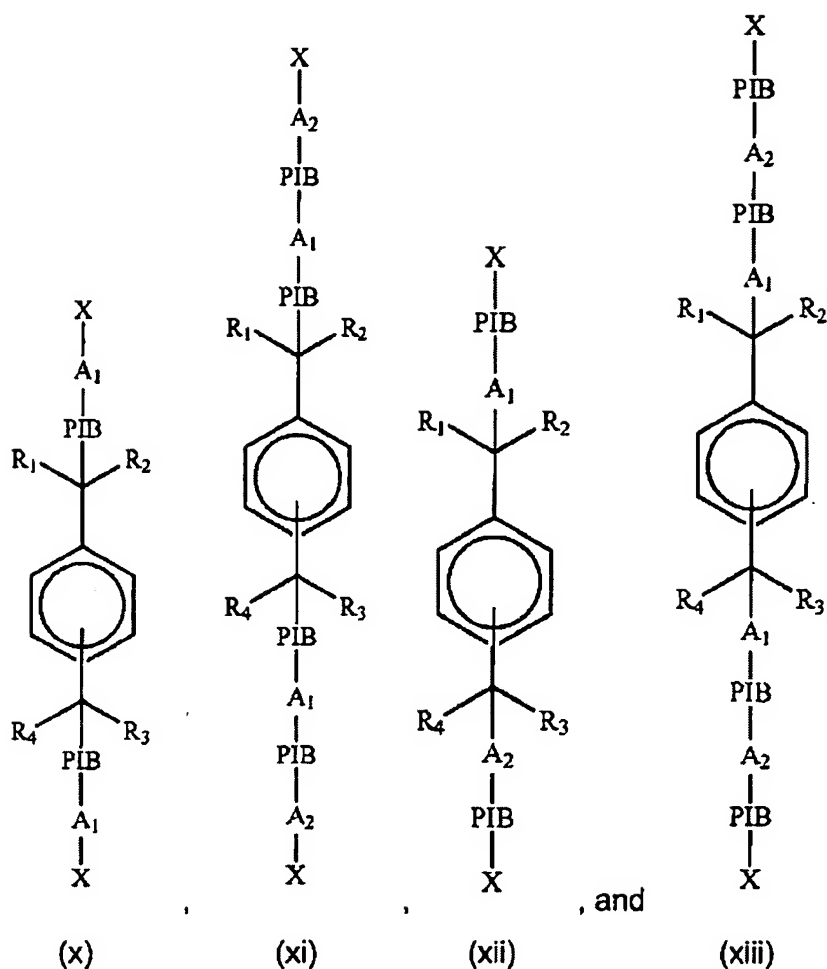
wherein m, p and q are all independently-selected integers that are at least 1.

21. (previously presented) The composition of matter according to claim 20, further comprising an aromatic core from which two arms extend, wherein each arm comprises the PIB segment and the cycloolefin or polycycloolefin segment.

22. (previously presented) The composition of matter according to claim 21, wherein each of the arms comprises the same copolymer.

23. (previously presented) The composition of matter according to claim 21, wherein each of the arms is obtained by a living cationic polymerization process.

24. (previously presented) The composition of matter according to claim 21, wherein the composition of matter is represented by the formula selected from the one or more of the following formulas:



wherein A₁ and A₂ are independently-selected cycloolefin or polycycloolefin segments;

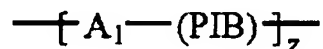
wherein R₁ to R₄ are each independently selected from hydrogen, a methyl group, an ethyl group, and a phenyl group; and

wherein X is selected from -Cl, -Br, -OH, -OCH₃, -OCH₂CH₃, and -OCOCH₃.

25. (previously presented) The composition of matter according to claim 20, further comprising an aromatic core from which three arms extend, wherein each arm comprises the PIB segment and the cycloolefin or polycycloolefin segment.

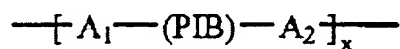
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26. (previously presented) The composition of matter according to claim 20, wherein the polyisobutylene segment and the cycloolefin or polycycloolefin segment are arranged according to the formula:



wherein Z is an integer that is at least 1, and wherein A₁ is the cycloolefin or polycycloolefin segment.

27. (previously presented) The composition of matter according to claim 20, wherein the polyisobutylene segment and the polycycloolefin segment are arranged according to the formula:



wherein X is an integer that is at least 1, and wherein A₁ and A₂ are independently selected cycloolefin or polycycloolefin segments.

28. (previously presented) A thermoplastic elastomer comprising the composition of matter according to claim 20.

29. (previously presented) An adhesive composition comprising the composition of matter according to claim 20.

30. (previously presented) A coating composition comprising the composition of matter according to claim 20.